



09770509.010902

#10

SEQUENCE LISTING

<110> Katagiri, Fumi

<120> OOMYCETE FTSZ-MT AS A TARGET FOR
ANTIMICROBIAL-SPECIFIC BIOCIDES

#10

<130> NADII.018A

<160> 32

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 535

<212> DNA

<213> Phytophthora infestans

<220>

<221> CDS

<222> (2)...(535)

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Ala Ser Gln Leu Glu Gly Val Glu Phe Ile Val Ala Asn Thr Asp Cys

1

5

10

15

cag gct ctg gga cgc tcg ctg gcg ccg cac aag atc acg ctg ggc aaa 97

Gln Ala Leu Gly Arg Ser Leu Ala Pro His Lys Ile Thr Leu Gly Lys

20

25

30

gat atc acc aag gga cta gga gct gga tcc aaa cct gag ctg ggt aaa 145

Asp Ile Thr Lys Gly Leu Gly Ala Gly Ser Lys Pro Glu Leu Gly Lys

35

40

45

cgc tct gcg gaa cag cag aaa gtg gat atc caa cgg atg tta cag gac 193

Arg Ser Ala Glu Gln Gln Lys Val Asp Ile Gln Arg Met Leu Gln Asp

50

55

60

agc aac atg ctg ttt atc acg ggc gga atg ggc ggc gga acc tgc aca 241

Ser Asn Met Leu Phe Ile Thr Gly Gly Met Gly Gly Gly Thr Cys Thr

65

70

75

80

gga gcc gca cct gtc gtg gcc agt gta gcc agg gag ctg ggg atc cta 289

Gly Ala Ala Pro Val Val Ala Ser Val Ala Arg Glu Leu Gly Ile Leu

85

90

95

acg gtc gga gta gta agc aca ccg ttc cga tcc gaa gga ccc aat cgc 337

Thr Val Gly Val Val Ser Thr Pro Phe Arg Ser Glu Gly Pro Asn Arg

100

105

110

act cgt ctg gcc aat gct gga gta aaa gaa ctg gcc aag tac gtc gac 385

Thr Arg Leu Ala Asn Ala Gly Val Lys Glu Leu Ala Lys Tyr Val Asp

115

120

125

acc tta att gtc gtg ccc aac cag aac ttg ctg gct ttg gca gac aag 433
 Thr Leu Ile Val Val Pro Asn Gln Asn Leu Leu Ala Leu Ala Asp Lys
 130 135 140

agc acg acc atg ttg gaa gcc ttc cgg tat gcc gac gac gtg ctg ctt 481
 Ser Thr Thr Met Leu Glu Ala Phe Arg Tyr Ala Asp Asp Val Leu Leu
 145 150 155 160

gaa gga gtt aaa ggt gtc acg gac ttg atc gtt cgc ccg gga ctt atc 529
 Glu Gly Val Lys Gly Val Thr Asp Leu Ile Val Arg Pro Gly Leu Ile
 165 170 175

aat ttg 535
 Asn Leu

<210> 2
 <211> 178
 <212> PRT
 <213> *Phytophthora infestans*

<400> 2
 Ala Ser Gln Leu Glu Gly Val Glu Phe Ile Val Ala Asn Thr Asp Cys
 1 5 10 15
 Gln Ala Leu Gly Arg Ser Leu Ala Pro His Lys Ile Thr Leu Gly Lys
 20 25 30
 Asp Ile Thr Lys Gly Leu Gly Ala Gly Ser Lys Pro Glu Leu Gly Lys
 35 40 45
 Arg Ser Ala Glu Gln Gln Lys Val Asp Ile Gln Arg Met Leu Gln Asp
 50 55 60
 Ser Asn Met Leu Phe Ile Thr Gly Gly Met Gly Gly Gly Thr Cys Thr
 65 70 75 80
 Gly Ala Ala Pro Val Val Ala Ser Val Ala Arg Glu Leu Gly Ile Leu
 85 90 95
 Thr Val Gly Val Val Ser Thr Pro Phe Arg Ser Glu Gly Pro Asn Arg
 100 105 110
 Thr Arg Leu Ala Asn Ala Gly Val Lys Glu Leu Ala Lys Tyr Val Asp
 115 120 125
 Thr Leu Ile Val Val Pro Asn Gln Asn Leu Leu Ala Leu Ala Asp Lys
 130 135 140
 Ser Thr Thr Met Leu Glu Ala Phe Arg Tyr Ala Asp Asp Val Leu Leu
 145 150 155 160
 Glu Gly Val Lys Gly Val Thr Asp Leu Ile Val Arg Pro Gly Leu Ile
 165 170 175
 Asn Leu

<210> 3
 <211> 220
 <212> DNA
 <213> *Phytophthora infestans*

<220>
 <221> CDS
 <222> (2)...(220)

<223> cDNA

<400> 3

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c gcg cgc ggc ctg cag ggt gtg gag ttt ctt gtt tgc aac acg gat gct 49
  Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala
    1             5             10             15

cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct 97
  Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
        20             25             30

gaa ttg act gga gga ttg ggc tgt ggc gct aac ccc gaa gtt ggc cga 145
  Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg
        35             40             45

gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt cag ggt 193
  Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly
        50             55             60

gca aac atg atg ttt gtt act gcg ggt 220
  Ala Asn Met Met Phe Val Thr Ala Gly
    65             70

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<210> 4

<211> 73

<212> PRT

<213> Phytophthora infestans

<400> 4

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Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala
  1             5             10             15
Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
        20             25             30
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg
        35             40             45
Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly
        50             55             60
Ala Asn Met Met Phe Val Thr Ala Gly
  65             70

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<210> 5

<211> 388

<212> DNA

<213> Phytophthora infestans

<220>

<221> intron

<222> (143)...(204)

<221> intron

<222> (265)...(370)

<221> CDS

<222> (2)...(142)

<221> CDS

<222> (205) ... (264)

<221> CDS

<222> (371) ... (388)

<400> 5

c gcg cgc ggc ctg cag ggt gtg gag ttt ctt gtt tgc aac acg gat gct 49
Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala
1 5 10 15

cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct 97
Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
20 25 30

gaa ttg act gga gga ttg ggc tgt ggc gct aac ccc gaa gtt ggg 142
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly
35 40 45

tgagtgactg cgtaaaagcg gtattttttt ttcttacata ctgaccttaa ctattgatta 202
gc cga gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt 249
Arg Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val
50 55 60

cag ggt gca aac atg gtttgtctcg gtgacattgc gtttctcaag acgttccgat 304
Gln Gly Ala Asn Met
65

ttgagcgaat gacttggtga tgacaacgat atgattatta acttctgctt ttatgccct 364
atatag atg ttt gtt act gcg ggt 388
Met Phe Val Thr Ala Gly
70

<210> 6

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<221> misc_feature

<222> (1) ... (20)

<223> n = inosine

<400> 6

aaygcngtna ayaayatgat 20

<210> 7

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<221> misc_feature

<222> (1)...(20)

<223> n = inosine

<400> 7

gtncncgtnc cncnccccat

20

<210> 8

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR primer

<221> misc_feature

<222> (1)...(17)

<223> n = inosine

<400> 8

gtnecknacrt cngcraartc

20

<210> 9

<211> 1423

<212> DNA

<213> Phytophthora infestans

<220>

<221> CDS

<222> (2)...(1261)

<400> 9

g atg gcg ata tcc cgc atg aaa gct gcg gcg atg gcg ctg cta cgt gcc 49

Met Ala Ile Ser Arg Met Lys Ala Ala Ala Met Ala Leu Leu Arg Ala

1

5

10

15

cgc cag acc tcc cag tcc gcc act caa cac ctc gcc ttc tct act gaa 97

Arg Gln Thr Ser Gln Ser Ala Thr Gln His Leu Ala Phe Ser Thr Glu

20

25

30

gcc act gat gct gca gct gcc gcg tta cgc atg ggc ttt aaa aag gct 145

Ala Thr Asp Ala Ala Ala Ala Ala Leu Arg Met Gly Phe Lys Lys Ala

35

40

45

cga aaa gac gag gat ggc ggt gtg aaa gtg ggg ctg gag gca gag ccc 193

Arg Lys Asp Glu Asp Gly Gly Val Lys Val Gly Leu Glu Ala Glu Pro

50

55

60

gat tca cca aca gat gtg agc gcc gtt tcg acg cca gta gta gag aag 241

Asp Ser Pro Thr Asp Val Ser Ala Val Ser Thr Pro Val Val Glu Lys

65

70

75

80

aag ctc gtg ccg cca gcc atg agc tcc aca cag cca ctt tgg ctc aca 289

Lys Leu Val Pro Pro Ala Met Ser Ser Thr Gln Pro Leu Trp Leu Thr

85	90	95	
cag gac cat cct gtg aca gac ctg tgc ggc ttt gca ccg aag att gtg			337
Gln Asp His Pro Val Thr Asp Leu Ser Gly Phe Ala Pro Lys Ile Val			
100	105	110	
gtg gtt ggc gtc gga gga gct gga gga aat gcg gtg aac aac atg atc			385
Val Val Gly Val Gly Gly Ala Gly Gly Asn Ala Val Asn Asn Met Ile			
115	120	125	
gcg cgc ggc ctg cag ggt gtg gag ttt ctt gtt tgc aac acg gat gct			433
Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala			
130	135	140	
cag cac tta cgc acg acg ctg acg gag aac cgc gtt cag atg gct cct			481
Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro			
145	150	155	160
gaa ttg act gga gga ctg ggc tgt ggc gct aac ccc gaa gtt ggc cga			529
Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg			
165	170	175	
gag gcg gca gag gcc gcg att gat gag att ttg gag cgc gtt cag ggt			577
Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly			
180	185	190	
gca aac atg atg ttt gtt act gcg ggt atg ggt ggc gga aca ggt aca			625
Ala Asn Met Met Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr			
195	200	205	
ggt gca gca ccc gtc att gct cag gct gcc tta gat gct ggt atc ctc			673
Gly Ala Ala Pro Val Ile Ala Gln Ala Ala Leu Asp Ala Gly Ile Leu			
210	215	220	
acc gta gct gtc gtt act aag ccg ttc cgg ttt gag gga aac aac cgt			721
Thr Val Ala Val Val Thr Lys Pro Phe Arg Phe Glu Gly Asn Asn Arg			
225	230	235	240
gca aag ctt gcg gca caa ggc ctc gct gaa ctg aag gat agc gtc gat			769
Ala Lys Leu Ala Ala Gln Gly Leu Ala Glu Leu Lys Asp Ser Val Asp			
245	250	255	
acg atg ctt gtg atc ccg aac caa aac ttg ttc aac atg tca aat gag			817
Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Asn Met Ser Asn Glu			
260	265	270	
cgc acc tgc ttg atg gac gca ttc aga atg gcg gac aat gtg ctt ctg			865
Arg Thr Ser Leu Met Asp Ala Phe Arg Met Ala Asp Asn Val Leu Leu			
275	280	285	
gac ggt gtc aag aac att tgc gat ttg atg gtg atg cct ggg ctc att			913
Asp Gly Val Lys Asn Ile Ser Asp Leu Met Val Met Pro Gly Leu Ile			
290	295	300	
aac ctt gac ttt gcg gat gtt caa tgc gtc atg caa aat atg gga aac			961
Asn Leu Asp Phe Ala Asp Val Gln Ser Val Met Gln Asn Met Gly Asn			
305	310	315	320

gct atg atg gga agt gga gag gcc gat gga gag aat cgg gct ctg cgt 1009
 Ala Met Met Gly Ser Gly Glu Ala Asp Gly Glu Asn Arg Ala Leu Arg
 325 330 335

gct gct gaa gat gca ttg gcg aac cct ctt ctg ggt gat att tcg att 1057
 Ala Ala Glu Asp Ala Leu Ala Asn Pro Leu Leu Gly Asp Ile Ser Ile
 340 345 350

aag gac gcc aag ggc atg atc gtt aat atc acg gga ggc tcc gac ctg 1105
 Lys Asp Ala Lys Gly Met Ile Val Asn Ile Thr Gly Gly Ser Asp Leu
 355 360 365

acg cta ttt gaa gtt gat gag gct gct gag cgt gtg acg cgg gaa ctt 1153
 Thr Leu Phe Glu Val Asp Glu Ala Ala Glu Arg Val Thr Arg Glu Leu
 370 375 380

gat gat cca cac gcc aac atc atc ttc ggt tcg acc ttc gac gac tcg 1201
 Asp Asp Pro His Ala Asn Ile Ile Phe Gly Ser Thr Phe Asp Asp Ser
 385 390 395 400

ctg ggc ggc aag cta cgc gtc tcc gtg gtt gcc act ggt att gcc gac 1249
 Leu Gly Gly Lys Leu Arg Val Ser Val Val Ala Thr Gly Ile Ala Asp
 405 410 415

ccc gac aag tta tagaagccgt gatgttgccc agtatcaaag cgtaagcagg 1301
 Pro Asp Lys Leu
 420

ggaatgacac ctaatgacgt gattgctcaa gaaatctcta caatttgaag tggcatcgat 1361
 gtctccacgc acccgcgcggt gctgatcgga ttggtattat acggactgct tcatacttag 1421
 tt 1423

<210> 10

<211> 420

<212> PRT

<213> *Phytophthora infestans*

<400> 10

Met Ala Ile Ser Arg Met Lys Ala Ala Ala Met Ala Leu Leu Arg Ala
 1 5 10 15
 Arg Gln Thr Ser Gln Ser Ala Thr Gln His Leu Ala Phe Ser Thr Glu
 20 25 30
 Ala Thr Asp Ala Ala Ala Ala Ala Leu Arg Met Gly Phe Lys Lys Ala
 35 40 45
 Arg Lys Asp Glu Asp Gly Gly Val Lys Val Gly Leu Glu Ala Glu Pro
 50 55 60
 Asp Ser Pro Thr Asp Val Ser Ala Val Ser Thr Pro Val Val Glu Lys
 65 70 75 80
 Lys Leu Val Pro Pro Ala Met Ser Ser Thr Gln Pro Leu Trp Leu Thr
 85 90 95
 Gln Asp His Pro Val Thr Asp Leu Ser Gly Phe Ala Pro Lys Ile Val
 100 105 110
 Val Val Gly Val Gly Gly Ala Gly Gly Asn Ala Val Asn Asn Met Ile
 115 120 125
 Ala Arg Gly Leu Gln Gly Val Glu Phe Leu Val Cys Asn Thr Asp Ala
 130 135 140

Gln His Leu Arg Thr Thr Leu Thr Glu Asn Arg Val Gln Met Ala Pro
 145 150 155 160
 Glu Leu Thr Gly Gly Leu Gly Cys Gly Ala Asn Pro Glu Val Gly Arg
 165 170 175
 Glu Ala Ala Glu Ala Ala Ile Asp Glu Ile Leu Glu Arg Val Gln Gly
 180 185 190
 Ala Asn Met Met Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr
 195 200 205
 Gly Ala Ala Pro Val Ile Ala Gln Ala Ala Leu Asp Ala Gly Ile Leu
 210 215 220
 Thr Val Ala Val Val Thr Lys Pro Phe Arg Phe Glu Gly Asn Asn Arg
 225 230 235 240
 Ala Lys Leu Ala Ala Gln Gly Leu Ala Glu Leu Lys Asp Ser Val Asp
 245 250 255
 Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Asn Met Ser Asn Glu
 260 265 270
 Arg Thr Ser Leu Met Asp Ala Phe Arg Met Ala Asp Asn Val Leu Leu
 275 280 285
 Asp Gly Val Lys Asn Ile Ser Asp Leu Met Val Met Pro Gly Leu Ile
 290 295 300
 Asn Leu Asp Phe Ala Asp Val Gln Ser Val Met Gln Asn Met Gly Asn
 305 310 315 320
 Ala Met Met Gly Ser Gly Glu Ala Asp Gly Glu Asn Arg Ala Leu Arg
 325 330 335
 Ala Ala Glu Asp Ala Leu Ala Asn Pro Leu Leu Gly Asp Ile Ser Ile
 340 345 350
 Lys Asp Ala Lys Gly Met Ile Val Asn Ile Thr Gly Gly Ser Asp Leu
 355 360 365
 Thr Leu Phe Glu Val Asp Glu Ala Ala Glu Arg Val Thr Arg Glu Leu
 370 375 380
 Asp Asp Pro His Ala Asn Ile Ile Phe Gly Ser Thr Phe Asp Asp Ser
 385 390 395 400
 Leu Gly Gly Lys Leu Arg Val Ser Val Val Ala Thr Gly Ile Ala Asp
 405 410 415
 Pro Asp Lys Leu
 420

<210> 11

<211> 583

<212> PRT

<213> Agrobacterium tumefaciens

<400> 11

Met Thr Ile Gln Leu Gln Lys Pro Asp Ile Thr Glu Leu Lys Pro Arg
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 Ile Thr Val Phe Gly Val Gly Gly Gly Gly Gly Asn Ala Val Asn Asn
 20 25 30
 Met Ile Thr Val Gly Leu Gln Gly Val Asp Phe Val Val Ala Asn Thr
 35 40 45
 Asp Ala Gln Ala Leu Thr Met Thr Lys Ala Asp Arg Val Ile Gln Leu
 50 55 60
 Gly Val Asn Val Thr Glu Gly Leu Gly Ala Gly Ser Gln Pro Glu Val
 65 70 75 80
 Gly Arg Ala Ala Ala Glu Glu Cys Ile Asp Glu Ile Ile Asp His Leu
 85 90 95
 Asn Gly Thr His Met Cys Phe Val Thr Ala Gly Met Gly Gly Gly Thr

	100		105		110
Gly Thr Gly	Ala Ala Pro Val	Val Ala Gln Ala Ala	Arg Asn Lys Gly		
115		120	125		
Ile Leu Thr	Val Gly Val Val	Thr Lys Pro Phe His	Phe Glu Gly Gly		
130		135	140		
Arg Arg Met	Arg Leu Ala Glu	Gln Gly Ile Glu Glu	Leu Gln Lys Ser		
145	150	155	160		
Val Asp Thr	Leu Ile Val Ile	Pro Asn Gln Asn	Leu Phe Arg Ile	Ala	
	165	170	175		
Asn Asp Lys	Thr Thr Phe Ala	Asp Ala Phe Ala	Met Ala Asp	Gln Val	
	180	185	190		
Leu Tyr Ser	Gly Val Ala Cys	Ile Thr Asp Leu	Met Val Lys	Glu Gly	
	195	200	205		
Leu Ile Asn	Leu Asp Phe Ala	Asp Val Arg Ser	Val Met Arg	Glu Met	
	210	215	220		
Ala Arg Pro	Met Met Gly Thr	Gly Glu Ala Ser	Gly Pro Ala	Arg Ala	
225	230	235	240		
Met Gln Ala	Ala Glu Ala Ala	Ile Ala Asn Pro	Leu Leu Asp	Glu Thr	
	245	250	255		
Ser Met Lys	Gly Ala Gln Gly	Leu Leu Ile Ser	Ile Thr Gly	Gly Arg	
	260	265	270		
Asp Leu Thr	Leu Phe Glu Val	Asp Glu Ala Ala	Thr Arg Ile	Arg Glu	
	275	280	285		
Glu Val Asp	Pro Asp Ala Asn	Ile Ile Leu Gly	Ala Thr Phe	Asp Glu	
	290	295	300		
Ala Leu Glu	Gly Leu Ile Arg	Val Ser Val Val	Ala Thr Gly	Ile Asp	
305	310	315	320		
Arg Val Ala	Gly Ile Gly Glu	Gln Asn Ile Ala	Glu Met Arg	Ala Ala	
	325	330	335		
Ala Ala Lys	Pro Leu Ile Arg	Pro Ser Ala Ala	Val Ala Pro	Ala Pro	
	340	345	350		
Ala Ala Val	Gln Pro Ala His	Ala Val Ser Gln	Ala Pro Lys	Thr Val	
	355	360	365		
Asp Gln Ile	Ala Gln Thr Ile	Arg Ser Ala Glu	Ala Glu Met	Glu Arg	
	370	375	380		
Glu Leu Gly	Phe Ala Ala His	Gln Gln Pro Ser	Gln Asp Phe	Arg Pro	
385	390	395	400		
Gln Ser Lys	Leu Phe Ala Ser	Ser Pro Ala Glu	Ala Pro Ala	Ala Leu	
	405	410	415		
Arg Pro Ala	Gln Pro Val Gln	Gln Ala Ala Pro	Ala Pro Val	Ala Gln	
	420	425	430		
Ala Pro Val	Tyr His Ala Pro	Glu Gln Val Ala	Val Pro Ala	Pro Arg	
	435	440	445		
Met Gln Gln	Ala Gln Ala Pro	Val Tyr Gln Glu	Pro Ala Pro	Val Gly	
	450	455	460		
Arg Gln Pro	Glu Pro Val Arg	Met Pro Lys Val	Glu Asp Phe	Pro Pro	
465	470	475	480		
Val Val Lys	Ala Glu Met Asp	His Arg Asp Arg	Ala Thr Pro	Val Ala	
	485	490	495		
Gln Glu Glu	Arg Gly Pro Met	Gly Leu Leu Lys	Arg Ile Thr	Asn Ser	
	500	505	510		
Leu Gly Arg	Arg Glu Glu Glu	Glu Val Pro Ser	Asp Met Met	Asp Ala	
	515	520	525		
Pro Ser Met	Ala Pro Gln Arg	Arg Ala Pro Leu	Ser Pro Glu	Ala Ser	
	530	535	540		
Leu Tyr Ala	Pro Arg Arg Gly	Gln Leu Asp Asp	His Gly Arg	Ala Thr	
545	550	555	560		

Pro Ser Ser Ser Ser His His Asp Asp Asp Gln Leu Glu Ile Pro Ala
 565 570 575
 Phe Leu Arg Arg Gln Ser Asn
 580

<210> 12
 <211> 590
 <212> PRT
 <213> Sinorhizobium meliloti

<400> 12
 Met Ala Ile Asn Leu Gln Lys Pro Asp Ile Thr Glu Leu Lys Pro Arg
 1 5 10 15
 Ile Thr Val Phe Gly Val Gly Gly Gly Gly Asn Ala Val Asn Asn
 20 25 30
 Met Ile Thr Ala Gly Leu Gln Gly Val Asp Phe Val Val Ala Asn Thr
 35 40 45
 Asp Ala Gln Ala Leu Thr Met Thr Lys Ala Glu Arg Ile Ile Gln Met
 50 55 60
 Gly Val Ala Val Thr Glu Gly Leu Gly Ala Gly Ser Gln Pro Glu Val
 65 70 75 80
 Gly Arg Ala Ala Ala Glu Glu Cys Ile Asp Glu Ile Ile Asp His Leu
 85 90 95
 Gln Gly Thr His Met Cys Phe Val Thr Ala Gly Met Gly Gly Thr
 100 105 110
 Gly Thr Gly Ala Ala Pro Ile Val Ala Gln Ala Ala Arg Asn Lys Gly
 115 120 125
 Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Gly
 130 135 140
 Arg Arg Met Arg Ile Ala Asp Gln Gly Ile Ser Asp Leu Gln Lys Ser
 145 150 155 160
 Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala
 165 170 175
 Asn Asp Lys Thr Thr Phe Ala Asp Ala Phe Ala Met Ala Asp Gln Val
 180 185 190
 Leu Tyr Ser Gly Val Ala Cys Ile Thr Asp Leu Met Val Lys Glu Gly
 195 200 205
 Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Met Arg Glu Met
 210 215 220
 Gly Arg Ala Met Met Gly Thr Gly Glu Ala Ser Gly Glu Gly Arg Ala
 225 230 235 240
 Met Ala Ala Ala Glu Ala Ala Ile Ala Asn Pro Leu Leu Asp Glu Thr
 245 250 255
 Ser Met Lys Gly Ala Gln Gly Leu Leu Ile Ser Ile Thr Gly Gly Arg
 260 265 270
 Asp Leu Thr Leu Phe Glu Val Asp Glu Ala Ala Thr Arg Ile Arg Glu
 275 280 285
 Glu Val Asp Pro Asp Ala Asn Ile Ile Leu Gly Ala Thr Phe Asp Glu
 290 295 300
 Glu Leu Glu Gly Leu Ile Arg Val Ser Val Val Ala Thr Gly Ile Asp
 305 310 315 320
 Arg Thr Ala Ala Glu Val Ala Gly Arg Ser Ala Asp Phe Arg Pro Val
 325 330 335
 Ala Pro Lys Pro Ile Val Arg Pro Ser Ala Ala Val Pro Ala Gln Pro
 340 345 350
 Gln Pro Thr Val Ser Leu Gln Pro Val Pro Gln Pro Gln Pro Val Gln

355 360 365
 Gln Pro Leu Gln Gln Gln Asn Val Asp His Ile Ala Leu Ala Ile Arg
 370 375 380
 Glu Ala Glu Met Glu Arg Glu Leu Asp Ile Ala Ala Arg Ala Gln Val
 385 390 395 400
 Ala Ala Pro Ala Pro Gln Pro Gln Pro His Leu Gln Glu Glu Ala Phe
 405 410 415
 Arg Pro Gln Ser Lys Leu Phe Ala Gly Val Ala Pro Thr Glu Ala Ala
 420 425 430
 Pro Val Met Arg Pro Ala Gln Pro Ala Pro Arg Pro Val Glu Met Gln
 435 440 445
 Ala Pro Val Gln Pro Gln Met Gln Ala Gln Pro Val Gln Gln Glu Pro
 450 455 460
 Thr Gln Val Val Arg Gln Gln Ala Glu Pro Val Arg Met Pro Lys Val
 465 470 475 480
 Glu Asp Phe Pro Pro Val Val Lys Ala Glu Met Asp Tyr Arg Thr Gln
 485 490 495
 Pro Ala Pro Ala His Gln Glu Glu Arg Gly Pro Met Gly Leu Leu Asn
 500 505 510
 Arg Ile Thr Ser Ser Leu Gly Leu Arg Glu Arg Glu Ala Thr Asn Val
 515 520 525
 Ser Ser Asp Met Thr Ala Ala Ala Pro Ser Ala Ala Ser Gln Gln Arg
 530 535 540
 Arg Pro Leu Ser Pro Glu Ala Ser Leu Tyr Ala Pro Arg Arg Gly Gln
 545 550 555 560
 Leu Asp Asp His Gly Arg Ala Ala Pro Gln Met Arg Ser His Glu Asp
 565 570 575
 Asp Gln Leu Glu Ile Pro Ala Phe Leu Arg Arg Gln Ser Ser
 580 585 590

<210> 13
 <211> 581
 <212> PRT
 <213> Bartonella clarridgeiae

<400> 13
 Met Thr Ile Asn Leu His Arg Pro Asp Ile Ala Glu Leu Lys Pro Arg
 1 5 10 15
 Ile Thr Val Phe Gly Val Gly Gly Gly Gly Asn Ala Val Asn Asn
 20 25 30
 Met Ile Asn Ala Gly Leu Gln Gly Val Asp Phe Val Val Ala Asn Thr
 35 40 45
 Asp Ala Gln Ala Leu Ala Met Ser Lys Ala Glu Arg Val Ile Gln Leu
 50 55 60
 Gly Ala Ala Val Thr Glu Gly Leu Gly Ala Gly Ala Leu Pro Glu Val
 65 70 75 80
 Gly Arg Ala Ala Ala Asp Glu Cys Ile Asp Glu Ile Ile Asp His Leu
 85 90 95
 Ala Asp Ser His Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr
 100 105 110
 Gly Thr Gly Ala Ala Pro Val Val Ala Asn Ala Ala Arg Glu Lys Gly
 115 120 125
 Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe Gln Phe Glu Gly Ala
 130 135 140
 Arg Arg Met Lys Thr Ala Glu Ala Gly Ile Glu Glu Leu Gln Lys Ser
 145 150 155 160

Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Ile Ala
 165 170 175
 Asn Glu Lys Thr Thr Phe Ser Asp Ala Phe Ala Met Ala Asp Gln Val
 180 185 190
 Leu Tyr Ser Gly Val Ala Ser Ile Thr Asp Leu Met Ile Lys Glu Gly
 195 200 205
 Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Met His Glu Met
 210 215 220
 Gly Arg Ala Met Met Gly Thr Gly Glu Ala Ser Gly Asp Gly Arg Ala
 225 230 235 240
 Leu Ala Ala Ala Glu Ala Ala Ile Ala Asn Pro Leu Leu Asp Asp Thr
 245 250 255
 Ser Met Arg Gly Ala Arg Gly Leu Leu Ile Ser Ile Thr Gly Gly Arg
 260 265 270
 Asp Met Thr Leu Phe Glu Val Asp Glu Ala Ala Asn Arg Ile Arg Glu
 275 280 285
 Glu Val Asp Ala Asp Ala Asn Val Ile Phe Gly Ala Ile Asp Asp Glu
 290 295 300
 Ser Leu Glu Gly Val Ile Arg Val Ser Val Val Ala Thr Gly Ile Asp
 305 310 315 320
 Arg Glu Ile Asn Asp Val Ile Gln Pro Ser Asn Thr Lys Phe His Arg
 325 330 335
 Ser Ala Thr Ser Met Arg Lys Asn Asp Ala Gly Val Thr Gln Thr Ser
 340 345 350
 Ser Gln Ser Ser Ser Leu Arg Ser Glu Ser Met Val Glu Val Ile Glu
 355 360 365
 Ala Leu Glu Val Glu Met Lys Gln Pro Ile Glu Glu Pro Phe Cys Pro
 370 375 380
 Lys Ser Gln Phe Phe Val Gln Ser Thr Asp Thr Tyr Thr Pro Arg Ser
 385 390 395 400
 Met Asn Ala Ala Ser Tyr Gly Gln Asn Ile His Gly Gln Thr Ser Asn
 405 410 415
 Ala Leu Arg Met Gln Val Gly Cys Val Ser Gln Gln Pro Val Ala Lys
 420 425 430
 Ala Val Asn Met Glu Ala Thr Ala His Val Leu Asp Asp Met Thr Arg
 435 440 445
 Ile Val Glu Gln Lys Lys Lys Gln Ala Gln Met Gln Ser His Ser Met
 450 455 460
 Ser Met Arg Met Pro Glu Leu Lys Asp Phe Pro Ser Ser Ile Arg Gly
 465 470 475 480
 Gln Ser Thr Asn Phe Ser Asn Ala Asp Gln Gly Pro Arg Asn Leu Trp
 485 490 495
 Gln Arg Leu Lys Gln Ser Leu Thr Tyr Arg Glu Glu Ala Glu Pro Glu
 500 505 510
 Ala Arg Leu Glu Pro Ala Val Asn Ser Ser Leu Cys Lys Asp Ser His
 515 520 525
 Ile Ser Ser Ala Ser Ser Gln Gly Ile Ser Gln Asp Thr Ser Val Tyr
 530 535 540
 Ile Pro Arg His Ser Thr Glu Leu Gln Gln His Ala Ser Gln Asp Gln
 545 550 555 560
 Asn Val Cys Val Ser Glu Glu Asp Glu Leu Glu Ile Pro Ala Phe Leu
 565 570 575
 Arg Arg Gln Ala Asn
 580

<211> 452
 <212> PRT
 <213> Rickettsia prowazekii

<400> 14

Met	Val	Leu	Asn	Ile	Lys	Ala	Pro	Glu	Asn	Ile	Val	Leu	Lys	Pro	Thr
1			5						10					15	
Ile	Thr	Val	Phe	Gly	Val	Gly	Gly	Ala	Gly	Ser	Asn	Ala	Val	Asn	Asn
		20						25					30		
Met	Ile	His	Ala	Asn	Leu	Gln	Gly	Ala	Asn	Phe	Val	Val	Ala	Asn	Thr
	35					40						45			
Asp	Ala	Gln	Ser	Leu	Glu	His	Ser	Leu	Cys	Ile	Asn	Lys	Ile	Gln	Leu
	50				55					60					
Gly	Val	Ser	Thr	Thr	Arg	Gly	Leu	Gly	Ala	Gly	Ala	Ser	Pro	Glu	Val
65				70					75					80	
Gly	Ala	Leu	Ala	Ala	Gln	Glu	Ser	Glu	Asn	Glu	Ile	Arg	Ser	Ser	Leu
			85					90						95	
Glu	Asn	Ser	Asn	Met	Val	Phe	Ile	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr
		100						105					110		
Gly	Thr	Gly	Ser	Ala	Pro	Ile	Ile	Ala	Arg	Ile	Ala	Lys	Glu	Leu	Gly
	115					120						125			
Ile	Leu	Thr	Val	Gly	Val	Val	Thr	Lys	Pro	Phe	His	Phe	Glu	Gly	Gly
	130				135						140				
His	Arg	Met	Lys	Thr	Ala	Asp	Lys	Gly	Leu	Ile	Glu	Leu	Gln	Gln	Phe
145				150					155					160	
Val	Asp	Thr	Leu	Ile	Val	Ile	Pro	Asn	Gln	Asn	Leu	Phe	Arg	Ile	Ala
			165					170						175	
Asn	Glu	Gln	Thr	Phe	Ala	Asp	Ala	Phe	Lys	Met	Ala	Asp	Asp	Val	
	180					185					190				
Leu	His	Ala	Gly	Val	Arg	Gly	Val	Thr	Asp	Leu	Met	Ile	Met	Pro	Gly
	195					200					205				
Leu	Ile	Asn	Leu	Asp	Phe	Ala	Asp	Ile	Lys	Ala	Val	Met	Ser	Glu	Met
	210				215						220				
Gly	Lys	Ala	Met	Met	Gly	Thr	Gly	Glu	Asp	Ser	Gly	Glu	Asp	Arg	Ala
225				230					235					240	
Ile	Lys	Ala	Ala	Glu	Ser	Ala	Ile	Ser	Asn	Pro	Leu	Leu	Asp	His	Ser
			245					250						255	
Ser	Met	Cys	Gly	Ala	Arg	Gly	Val	Leu	Ile	Asn	Ile	Thr	Gly	Gly	Pro
	260					265							270		
Asp	Met	Thr	Leu	Phe	Glu	Val	Asp	Asn	Ala	Ala	Asn	Arg	Ile	Arg	Glu
	275					280						285			
Glu	Val	Asp	Asn	Ile	Asp	Ala	Asn	Ile	Ile	Phe	Gly	Ser	Thr	Phe	Asn
	290				295					300					
Pro	Glu	Leu	Lys	Gly	Ile	Ile	Arg	Val	Ser	Val	Val	Ala	Thr	Gly	Ile
305				310					315					320	
Asp	Ala	Asp	Lys	Val	Pro	Lys	Tyr	Lys	Leu	Ala	Ile	Asp	Lys	Asn	Thr
			325					330						335	
Asn	Thr	Leu	Pro	Glu	Glu	Thr	Tyr	Asn	Glu	Ser	Ile	Ile	Gln	His	Thr
		340				345							350		
Gln	Ile	Glu	Thr	Ile	Pro	Ser	Phe	Asn	Ser	Tyr	Ser	Thr	Glu	Asn	Ile
	355					360						365			
Glu	Ile	Asn	Glu	Ser	Ser	Ile	Lys	Gln	Asp	Tyr	Thr	Gly	Asn	Glu	Gln
	370				375					380					
Glu	Leu	Arg	Leu	His	Val	Asn	Ala	Val	Asn	Lys	Pro	Glu	Asn	Asn	Ser
385				390					395					400	
Gln	Lys	Ser	Ser	Phe	Leu	Gly	Lys	Ile	Trp	Glu	Ser	Leu	Arg	Thr	Ser
			405					410						415	

Asn Asn Gln Thr Leu Glu Arg Lys Asn Val Ile Val Asn Thr Val Asp
 420 425 430
 Gln Asp Asn Lys Glu Ser Asp Ile His Asp Ile Pro Ala Phe Leu Arg
 435 440 445
 Lys Lys Arg Asp
 450

<210> 15
 <211> 508
 <212> PRT
 <213> *Caulobacter crescentus*

<400> 15
 Met Ala Ile Ser Leu Ser Ala Pro Arg Thr Thr Glu Leu Lys Pro Arg
 1 5 10 15
 Ile Val Val Phe Gly Val Gly Gly Ala Gly Gly Asn Ala Val Asn Asn
 20 25 30
 Met Ile Glu Ala Gly Leu Glu Gly Val Glu Phe Val Val Ala Asn Thr
 35 40 45
 Asp Ala Gln Gln Leu Gln Phe Ala Lys Thr Asp Arg Arg Ile Gln Leu
 50 55 60
 Gly Val Gln Ile Thr Gln Gly Leu Gly Ala Gly Ala His Pro Glu Val
 65 70 75 80
 Gly Met Ser Ala Ala Glu Glu Ser Phe Pro Glu Ile Gly Glu His Leu
 85 90 95
 Asp Gly Ala His Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr
 100 105 110
 Gly Thr Gly Ala Ala Pro Ile Ile Ala Lys Cys Ala Arg Glu Arg Gly
 115 120 125
 Ile Leu Thr Val Gly Val Val Thr Lys Pro Phe His Phe Glu Gly Arg
 130 135 140
 His Arg Met Arg Leu Ala Asp Ser Gly Ile Gln Glu Leu Gln Arg Tyr
 145 150 155 160
 Val Asp Thr Leu Ile Val Ile Pro Asn Gln Asn Leu Phe Arg Val Ala
 165 170 175
 Asn Glu Arg Thr Thr Phe Ala Glu Ala Phe Gly Met Ala Asp Gln Val
 180 185 190
 Leu His Ser Gly Val Arg Ser Ile Thr Asp Leu Met Val Leu Pro Gly
 195 200 205
 Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Thr Val Met Thr Glu Met
 210 215 220
 Gly Lys Ala Met Met Gly Thr Gly Glu Gly Thr Ala Glu Asp Arg Ala
 225 230 235 240
 Leu Met Ala Ala Gln Asn Ala Ile Ala Asn Pro Leu Leu Asp Glu Val
 245 250 255
 Ser Leu Lys Gly Ala Lys Ala Val Leu Val Asn Val Thr Gly Gly Met
 260 265 270
 Asp Met Thr Leu Leu Glu Val Asp Glu Ala Ala Asn Ala Ile Ser Asp
 275 280 285
 Gln Val Asp Pro Glu Ala Asn Ile Ile Phe Gly Ala Ala Phe Asp Pro
 290 295 300
 Ser Leu Glu Gly Val Ile Arg Val Ser Val Val Ala Thr Gly Met Asp
 305 310 315 320
 Gly Ala Ser Ile Ala Gln Ile Glu Pro Lys Pro Val Ser Arg Asn Ile
 325 330 335
 Ser Ala Ala Pro Leu Ile Ala Glu Thr Ser Arg Pro Ala Pro Gln Pro

340 345 350
 Glu Pro Ala Arg Pro Thr Ala Arg Tyr Glu Ala Ala Arg Pro Ala Glu
 355 360 365
 Arg Pro Val Ala Phe Ala Pro Glu Pro Ala Pro Glu Pro Glu Ile Val
 370 375 380
 Met Ser Ala Pro Gln Pro Glu Pro Glu Ala Glu Leu Tyr Tyr Asp Glu
 385 390 395 400
 Pro Thr Val Ala Glu Glu Pro Arg Val Ser Ala Ala Pro Ala Arg Ser
 405 410 415
 Val Asn Arg Ile Val Asp Pro Leu Val Asp Asp Val Ala Glu Glu Pro
 420 425 430
 Leu Phe Pro Glu Asn Asn Tyr Tyr Glu Glu Arg Arg Pro Gln Lys Gln
 435 440 445
 Gly Gly Phe Phe Ser Met Phe Gly Gly Gly Arg Gln Arg Tyr Glu Gln
 450 455 460
 Gln Ala Ser Ala Pro Gln Ala Gln Ala Arg Ser Ala Gln Ser Ala Arg
 465 470 475 480
 Pro Gln Leu Gln Pro Ile Glu Thr Pro Gln Ala Asp Asp Ala Glu Asp
 485 490 495
 Leu Glu Ile Pro Ser Phe Leu Arg Arg Leu Ala Asn
 500 505

<210> 16

<211> 407

<212> PRT

<213> Cyanidioschyzon merolae

<400> 16

Met Thr Gly Ala Leu Arg Tyr Arg Ala Leu Ala Arg Val Ile Glu Arg
 1 5 10 15
 Cys Leu Gly Ser Arg Ala Leu Gly Glu Ser Gly Ser Ala Ala Ala Val
 20 25 30
 Ser Asn Tyr Val Trp Gln Arg Glu Ala Ser Arg Gly Phe Val Leu Gly
 35 40 45
 Thr Arg Leu Leu Pro Trp Cys Pro Leu Gly Ser Arg Leu Leu His Ser
 50 55 60
 Pro Ser Gln Thr Ala Ser Val Ile Arg Met Asn Thr Gly Ser Phe Ala
 65 70 75 80
 Pro Lys Pro Asp Leu Gly Glu Gln Gln Pro Asn Thr Leu Thr Gly Gln
 85 90 95
 Pro Arg Ile Met Val Val Gly Val Gly Gly Ala Gly Gly Asn Ala Val
 100 105 110
 Asn Asn Met Ile Ala Ser Ser Leu Pro Gly Val Glu Phe Leu Val Ala
 115 120 125
 Asn Thr Asp Ala Gln Ala Leu Lys Met Ser Leu Cys Pro Asn Arg Ile
 130 135 140
 Gln Leu Gly Ala Ser Leu Thr Glu Gly Leu Gly Ala Gly Ala Arg Pro
 145 150 155 160
 Asp Ile Gly Arg Ala Ala Ala Glu Glu Ala Tyr Glu Thr Leu Lys Arg
 165 170 175
 Glu Phe Arg Gly Val His Leu Leu Phe Val Thr Ala Gly Met Gly Gly
 180 185 190
 Gly Thr Gly Thr Gly Ala Ala Pro Ile Ile Ala Arg Ala Ala Ala Glu
 195 200 205
 Leu Gly Cys Leu Thr Val Ala Val Val Thr Lys Pro Phe His Phe Glu
 210 215 220

Gly Met Ile Arg Met Lys Thr Ala Glu Gln Gly Ile Val Glu Leu Thr
 225 230 235 240
 Glu His Val Asp Thr Met Leu Val Ile Pro Asn Gln Asn Leu Phe Lys
 245 250 255
 Val Ala Ser Pro Arg Thr Ser Phe Leu Asp Ala Phe Arg Leu Ala Asp
 260 265 270
 His Val Leu Tyr Ser Gly Val Arg Ser Ile Thr Asp Leu Met Thr Val
 275 280 285
 Pro Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Ser Val Val Arg
 290 295 300
 Glu Met Gly Arg Ala Met Met Gly Ser Gly Glu Val Glu Met Glu Ala
 305 310 315 320
 Gly Asn Glu Glu Arg Ala Ile Arg Ala Ser Glu Ala Ala Ile Cys Asn
 325 330 335
 Pro Leu Leu Asp Glu Thr Ser Leu Arg Gly Ala Arg Gly Val Leu Val
 340 345 350
 Asn Ile Thr Gly Gly Thr Asp Met Thr Leu Phe Glu Ile Asp Ala Ala
 355 360 365
 Ala Asn Arg Ile Arg Glu Gln Val Asp Pro Asp Ala Asn Ile Ile Phe
 370 375 380
 Gly Ser Ala Phe Asp Ala Ser Met Gln Gly Arg Leu Arg Val Ser Val
 385 390 395 400
 Leu Ala Thr Gly Ile Pro Ser
 405

<210> 17

<211> 401

<212> PRT

<213> Mallomonas splendens

<400> 17

Met Arg Ile Thr Gly Ala Asn Arg Ile Leu Ser Leu Ser Arg Ile Arg
 1 5 10 15
 His Phe Ser Asp Gly Ala Ser Leu Asn Lys Ala Phe Leu Arg Ser Val
 20 25 30
 Lys Pro Gly Val Lys Pro Glu Gln Tyr Asp Ser Arg Ser Gly Asn Ser
 35 40 45
 Ser Gln Ala Gln Ser Thr Glu His Val Lys Asp Lys Phe Val Glu Pro
 50 55 60
 Gly Asn Leu Arg Phe Arg Thr Gly Glu Tyr Ile Thr Glu Phe Leu Pro
 65 70 75 80
 Lys Ile Cys Val Phe Gly Val Gly Gly Gly Cys Asn Ala Val Asn
 85 90 95
 Asn Met Ile Ala Arg Lys Leu Ser Gly Val Glu Phe Val Cys Ala Asn
 100 105 110
 Thr Asp Ala Gln His Leu Ser Thr Cys Leu Thr Glu Asn Lys Leu Gln
 115 120 125
 Leu Gly Lys Glu Ser Thr Gln Gly Leu Gly Cys Gly Ala Asn Pro Glu
 130 135 140
 Ser Gly Arg Arg Ala Ala Glu Glu Ser Lys Glu Glu Ile Ala Arg Tyr
 145 150 155 160
 Ile Ala Asp Ala Asn Met Val Phe Ile Thr Ala Gly Met Gly Gly Gly
 165 170 175
 Thr Gly Thr Gly Ala Ala Pro Val Val Ala Glu Val Cys Met Glu Lys
 180 185 190
 Asp Ile Leu Thr Val Ala Val Val Thr Lys Pro Phe Ser Phe Glu Gly

195	200	205
Lys His Arg Ala Arg Leu Ala Asn Glu Gly Ile Arg Ser Leu Glu Asp		
210	215	220
Arg Val Asp Thr Leu Ile Ile Ile Pro Asn Gln Asn Ile Phe Lys Leu		
225	230	235
Ile Asn Ala Ser Thr Ser Met Ala Asp Ala Phe Gly Leu Ala Asp Asp		240
	245	250
Ile Leu Leu Ala Gly Val Lys Ser Ile Thr Asp Leu Met Val Arg Pro		255
	260	265
Gly Leu Ile Asn Leu Asp Phe Ala Asp Val Arg Thr Val Met Ser Gly		270
	275	280
Met Gly His Ala Ile Met Gly Thr Gly Gln Ala Glu Gly Glu Asp Arg		285
	290	295
Ala Ile Arg Ala Ala Asn Asp Ala Leu Asn Asn Pro Leu Leu Gly Gly		300
305	310	315
Asp Phe Ser Val Arg Ser Ala Lys Gly Met Leu Val Asn Ile Thr Gly		320
	325	330
Gly Lys Asp Leu Thr Leu Val Glu Val Asp Ala Ala Ala Gln Arg Ile		335
	340	345
Thr Ser Glu Ile Glu Asp Glu Asp Ala Asn Val Ile Phe Gly Ser Ser		350
	355	360
Phe Asp Glu Ser Leu Gln Gly Ser Ile Arg Val Ser Ile Val Ala Thr		365
	370	375
Gly Ile Glu Ala Pro Gly Ala Ala Ala Ala Thr Ala Ala Pro Val Ile		380
385	390	395
Arg		400

<210> 18

<211> 483

<212> PRT

<213> Gentiana lutea

<400> 18

Met Ala Thr Ser Thr Ser Pro Cys Phe Thr Pro Tyr Asp Ile Gln Ser		
1	5	10
Pro Ser Arg Val Met Thr Thr Phe Gly Gly Arg Ile Ser Pro Met Lys		15
	20	25
Met Asn Leu Phe His Glu Lys Lys Val Phe Trp Val Phe Asp Gln Lys		30
	35	40
Gly Ser Arg Ile Tyr Pro His Phe Lys Cys Ser Thr Asn Ser His Asn		45
	50	55
Val Asn Gln His Gln Ser Lys Asp Pro Phe Leu Asn Leu His Pro Glu		60
65	70	75
Ile Ser Leu Leu Arg Gly Asp Gly Asn Asn Thr Leu Val Asp Ser Arg		80
	85	90
Val Asp Thr Ala Gly Ser Gly Arg Ser Val Thr Glu Ser Leu Arg Asp		95
	100	105
Ser Ser Ser Ser Asn Asn Tyr Ser Glu Ala Lys Ile Lys Val Val Gly		110
	115	120
Val Gly Gly Gly Gly Ser Asn Ala Val Asn Arg Met Ile Glu Ser Ala		125
	130	135
Met Lys Gly Val Glu Phe Trp Ile Val Asn Thr Asp Val Gln Ala Ile		140
145	150	155
Lys Met Ser Pro Val Tyr Leu Glu Asn Arg Leu Gln Ile Gly Gln Glu		160
	165	170
		175

Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Asp Ile Gly Met Asn
 180 185 190
 Ala Ala Lys Glu Ser Lys Glu Ala Ile Glu Glu Ala Val Tyr Gly Ala
 195 200 205
 Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly
 210 215 220
 Gly Ala Pro Val Ile Ala Gly Ile Ala Lys Ser Met Gly Ile Leu Thr
 225 230 235 240
 Val Gly Ile Val Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Ala
 245 250 255
 Val Gln Ala Gln Glu Gly Ile Ala Ala Leu Arg Asp Asn Val Asp Thr
 260 265 270
 Leu Ile Val Ile Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Pro Ser
 275 280 285
 Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln
 290 295 300
 Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn
 305 310 315 320
 Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser
 325 330 335
 Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Thr Arg Ala Arg Asp Ala
 340 345 350
 Ala Leu Asn Ala Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg
 355 360 365
 Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu
 370 375 380
 Phe Glu Val Asn Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro
 385 390 395 400
 Ser Ala Asn Leu Ile Phe Gly Ala Val Val Asp Pro Ser Leu Cys Gly
 405 410 415
 Gln Val Ser Ile Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu
 420 425 430
 Ser Asp Lys Arg Ser Ile Gln Ala Gly Gly Gln Leu Ala Pro Gly Asp
 435 440 445
 Ala Asn Gln Gly Ile Asn Arg Arg Pro Ser Ser Phe Ser Glu Ser Gly
 450 455 460
 Ser Val Glu Ile Pro Glu Phe Leu Arg Lys Lys Gly Arg Ser Arg Tyr
 465 470 475 480
 Pro Arg Ala

<210> 19
 <211> 468
 <212> PRT
 <213> Nicotiana tabacum

<400> 19
 Met Ala Thr Cys Thr Ser Ala Val Phe Met Pro Pro Asp Thr Arg Arg
 1 5 10 15
 Ser Arg Gly Val Leu Thr Leu Leu Gly Gly Arg Leu Cys Ala Leu Lys
 20 25 30
 Met Gln Asp Glu Lys Ile Gly Phe Leu Gly Val Asn Gln Lys Gly Ser
 35 40 45
 Ser Ser Leu Pro Gln Phe Lys Cys Ser Ser Asn Ser His Ser Val Asn
 50 55 60
 Gln Tyr Gln Asn Lys Asp Ser Phe Leu Asn Leu His Pro Glu Ile Ser

65					70					75				80
Leu	Leu	Arg	Gly	Glu	Glu	Ser	Ser	Ser	Gly	Asn	Val	Thr	Glu	Ser
				85					90					95
Met	Asp	Ser	Ser	Arg	Ser	Asn	Asn	Phe	Asn	Glu	Ala	Lys	Ile	Lys
			100					105					110	
Val	Gly	Val	Gly	Gly	Gly	Gly	Ser	Asn	Ala	Val	Asn	Arg	Met	Ile
		115					120					125		
Ser	Ser	Met	Lys	Gly	Val	Glu	Phe	Trp	Ile	Val	Asn	Thr	Asp	Ile
	130					135					140			
Ala	Met	Arg	Met	Ser	Pro	Val	Ala	Ala	Glu	Gln	Arg	Leu	Pro	Ile
145				150					155					160
Gln	Glu	Leu	Thr	Arg	Gly	Leu	Gly	Ala	Gly	Gly	Asn	Pro	Asp	Ile
			165						170					175
Met	Asn	Ala	Ala	Asn	Glu	Ser	Lys	Gln	Ala	Ile	Glu	Glu	Ala	Val
		180						185						190
Gly	Ala	Asp	Met	Val	Phe	Val	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr
	195						200					205		
Thr	Gly	Ala	Ala	Pro	Ile	Ile	Ala	Gly	Thr	Ala	Lys	Ser	Met	Gly
	210					215					220			
Leu	Thr	Val	Gly	Ile	Val	Thr	Thr	Pro	Phe	Ser	Phe	Glu	Gly	Arg
225					230				235					240
Arg	Ala	Val	Gln	Ala	Gln	Glu	Gly	Ile	Ala	Ala	Leu	Arg	Glu	Asn
			245						250					255
Asp	Thr	Leu	Ile	Val	Ile	Pro	Asn	Asp	Lys	Leu	Leu	Thr	Ala	Val
		260						265						270
Pro	Ser	Thr	Pro	Val	Thr	Glu	Ala	Phe	Asn	Leu	Ala	Asp	Asp	Ile
	275						280					285		
Arg	Gln	Gly	Val	Arg	Gly	Ile	Ser	Asp	Ile	Ile	Thr	Ile	Pro	Gly
	290					295					300			
Val	Asn	Val	Asp	Phe	Ala	Asp	Val	Arg	Ala	Ile	Met	Ala	Asn	Ala
305					310					315				320
Ser	Ser	Leu	Met	Gly	Ile	Gly	Thr	Ala	Thr	Gly	Lys	Thr	Arg	Ala
			325						330					335
Asp	Ala	Ala	Leu	Asn	Ala	Ile	Gln	Ser	Pro	Leu	Leu	Asp	Ile	Gly
		340						345					350	
Glu	Arg	Ala	Thr	Gly	Ile	Val	Trp	Asn	Ile	Thr	Gly	Gly	Ser	Asp
	355						360					365		
Thr	Leu	Phe	Glu	Val	Asn	Ala	Ala	Glu	Val	Ile	Tyr	Asp	Leu	Val
	370					375				380				
Asp	Pro	Ser	Ala	Asn	Leu	Ile	Phe	Gly	Ala	Val	Ile	Asp	Pro	Ser
385				390						395				400
Ser	Gly	Gln	Val	Ser	Ile	Thr	Leu	Ile	Ala	Thr	Gly	Phe	Lys	Arg
			405						410					415
Glu	Glu	Ser	Asp	Gly	Arg	Pro	Leu	Gln	Gly	Asn	Gln	Leu	Thr	Gln
		420						425					430	
Asp	Val	Ser	Leu	Gly	Asn	Asn	Arg	Arg	Pro	Ala	Ser	Phe	Leu	Glu
	435					440					445			
Gly	Ser	Val	Glu	Ile	Pro	Glu	Phe	Leu	Arg	Lys	Lys	Gly	Arg	Ser
	450					455					460			
Tyr	Pro	Arg	Ala											
465														

<210> 20

<211> 397

<212> PRT

<213> Arabidopsis thaliana

<400> 20

Met Leu Arg Gly Glu Gly Thr Ser Thr Ile Val Asn Pro Arg Lys Glu
 1 5 10 15
 Thr Ser Ser Gly Pro Val Val Glu Asp Phe Glu Glu Pro Ser Ala Pro
 20 25 30
 Ser Asn Tyr Asn Glu Ala Arg Ile Lys Val Ile Gly Val Gly Gly Gly
 35 40 45
 Gly Ser Asn Ala Val Asn Arg Met Ile Glu Ser Glu Met Ser Gly Val
 50 55 60
 Glu Phe Trp Ile Val Asn Thr Asp Ile Gln Ala Met Arg Met Ser Pro
 65 70 75 80
 Val Leu Pro Asp Asn Arg Leu Gln Ile Gly Lys Glu Leu Thr Arg Gly
 85 90 95
 Leu Gly Ala Gly Gly Asn Pro Glu Ile Gly Met Asn Ala Ala Arg Glu
 100 105 110
 Ser Lys Glu Val Ile Glu Glu Ala Leu Tyr Gly Ser Asp Met Val Phe
 115 120 125
 Val Thr Ala Gly Met Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Val
 130 135 140
 Ile Ala Gly Ile Ala Lys Ala Met Gly Ile Leu Thr Val Gly Ile Ala
 145 150 155 160
 Thr Thr Pro Phe Ser Phe Glu Gly Arg Arg Arg Thr Val Gln Ala Gln
 165 170 175
 Glu Gly Leu Ala Ser Leu Arg Asp Asn Val Asp Thr Leu Ile Val Ile
 180 185 190
 Pro Asn Asp Lys Leu Leu Thr Ala Val Ser Gln Ser Thr Pro Val Thr
 195 200 205
 Glu Ala Phe Asn Leu Ala Asp Ile Leu Arg Gln Gly Val Arg Gly
 210 215 220
 Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala
 225 230 235 240
 Asp Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile
 245 250 255
 Gly Thr Ala Thr Gly Lys Ser Arg Ala Arg Asp Ala Ala Leu Asn Ala
 260 265 270
 Ile Gln Ser Pro Leu Leu Asp Ile Gly Ile Glu Arg Ala Thr Gly Ile
 275 280 285
 Val Trp Asn Ile Thr Gly Gly Ser Asp Leu Thr Leu Phe Glu Val Asn
 290 295 300
 Ala Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro Thr Ala Asn Leu
 305 310 315 320
 Ile Phe Gly Ala Val Val Asp Pro Ala Leu Ser Gly Gln Val Ser Ile
 325 330 335
 Thr Leu Ile Ala Thr Gly Phe Lys Arg Gln Glu Glu Gly Glu Gly Arg
 340 345 350
 Thr Val Gln Met Val Gln Ala Asp Ala Ala Ser Val Gly Ala Thr Arg
 355 360 365
 Arg Pro Ser Ser Ser Phe Arg Glu Ser Gly Ser Val Glu Ile Pro Glu
 370 375 380
 Phe Leu Lys Lys Lys Gly Ser Ser Arg Tyr Pro Arg Val
 385 390 395

<210> 21

<211> 458

<212> PRT

<213> Physcomitrella patens

<400> 21

Met Ala Leu Phe Ser Gly Cys Ser Gly Trp Ala Gly Leu Lys Val Ser
 1 5 10 15
 Ser Arg Val Gly Gly Glu Ala Cys Arg Thr Pro Pro Val Val His Cys
 20 25 30
 Ser Met His Ser Arg Ser Ser Val Arg Ala Leu Arg Arg Ile Asp Arg
 35 40 45
 Ala Leu Ser Asn Gly Gly Leu Cys Asn Phe Gly Glu Arg Asp Leu Leu
 50 55 60
 Ala Leu Glu Ala Lys Ser Pro Leu Arg Cys Glu Pro Pro Ser Ser Val
 65 70 75 80
 Met Arg Asn Pro Val Met Ala Phe Glu Gly Ser Gly Asp Asp Thr Gly
 85 90 95
 Ser Tyr Asn Glu Ala Lys Ile Lys Val Ile Gly Val Gly Gly Gly Gly
 100 105 110
 Ser Asn Ala Val Asn Arg Met Leu Glu Ser Glu Met Gln Gly Val Glu
 115 120 125
 Phe Trp Ile Val Asn Thr Asp Ala Gln Ala Met Ala Leu Ser Pro Val
 130 135 140
 Pro Ala Gln Asn Arg Leu Gln Ile Gly Gln Lys Leu Thr Arg Gly Leu
 145 150 155 160
 Gly Ala Gly Gly Asn Pro Glu Ile Gly Cys Ser Ala Ala Glu Glu Ser
 165 170 175
 Lys Ala Met Val Glu Glu Ala Leu Arg Gly Ala Asp Met Val Phe Val
 180 185 190
 Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Ile Ile
 195 200 205
 Ala Gly Val Ala Lys Gln Leu Gly Ile Leu Thr Val Gly Ile Val Thr
 210 215 220
 Thr Pro Phe Ala Phe Glu Gly Arg Arg Arg Ala Val Gln Ala His Glu
 225 230 235 240
 Gly Ile Ala Ala Leu Lys Asn Asn Val Asp Thr Leu Ile Thr Ile Pro
 245 250 255
 Asn Asn Lys Leu Leu Thr Ala Val Ala Gln Ser Thr Pro Val Thr Glu
 260 265 270
 Ala Phe Asn Leu Ala Asp Asp Ile Leu Arg Gln Gly Val Arg Gly Ile
 275 280 285
 Ser Asp Ile Ile Thr Val Pro Gly Leu Val Asn Val Asp Phe Ala Asp
 290 295 300
 Val Arg Ala Ile Met Ala Asn Ala Gly Ser Ser Leu Met Gly Ile Gly
 305 310 315 320
 Thr Ala Thr Gly Lys Ser Arg Ala Arg Glu Ala Ala Leu Ser Ala Ile
 325 330 335
 Gln Ser Pro Leu Leu Asp Val Gly Ile Glu Arg Ala Thr Gly Ile Val
 340 345 350
 Trp Asn Ile Thr Gly Gly Ser Asp Met Thr Leu Phe Glu Val Asn Ala
 355 360 365
 Ala Ala Glu Val Ile Tyr Asp Leu Val Asp Pro Asn Ala Asn Leu Ile
 370 375 380
 Phe Gly Ala Val Val Asp Glu Ala Leu His Gly Gln Val Ser Ile Thr
 385 390 395 400
 Leu Ile Ala Thr Gly Phe Ser Ser Gln Asp Glu Pro Asp Ala Arg Ser
 405 410 415
 Met Gln Asn Val Ser Arg Ile Leu Asp Gly Gln Ala Gly Arg Ser Pro
 420 425 430

Thr Gly Leu Ser Gln Gly Ser Asn Gly Ser Ala Ile Asn Ile Pro Ser
 435 440 445
 Phe Leu Arg Lys Arg Gly Gln Thr Arg His
 450 455

<210> 22
 <211> 464
 <212> PRT
 <213> Physcomitrella patens

<400> 22
 Met Ala Leu Leu Gly Ser Arg Ser Gly Leu Val Gly Leu Arg Val Ser
 1 5 10 15
 Ser Arg Val Gly Gly Glu Ser Ser Arg Ile Val Pro Ala Thr Arg Asp
 20 25 30
 Arg Phe Cys Val His Leu Arg Pro Ser Thr Arg Ala His Arg Arg Leu
 35 40 45
 Asp Arg Thr Val Gly Asn Glu Ser Leu Cys Thr Pro Arg Glu Arg Asp
 50 55 60
 Leu Ala Ala Glu Pro Lys Phe Leu His Thr Gly Trp Glu Ser Ser Ser
 65 70 75 80
 Ser Ser Ser Ser Ser Ser Cys Glu Thr Gly Ile Pro Val Thr Ala Phe
 85 90 95
 Gly Gly Asn Gly Asp Glu Tyr Glu Ser Ser Asn Glu Ala Lys Ile Lys
 100 105 110
 Val Ile Gly Val Gly Gly Gly Gly Ser Asn Ala Val Asn Arg Met Leu
 115 120 125
 Glu Ser Glu Met Gln Gly Val Glu Phe Trp Ile Val Asn Thr Asp Ala
 130 135 140
 Gln Ala Met Ala Leu Ser Pro Val Pro Ala Gln Asn Arg Leu Gln Ile
 145 150 155 160
 Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Glu Ile
 165 170 175
 Gly Cys Ser Ala Ala Glu Glu Ser Lys Ala Met Val Glu Glu Ala Leu
 180 185 190
 Arg Gly Ala Asp Met Val Phe Val Thr Ala Gly Met Gly Gly Gly Thr
 195 200 205
 Gly Ser Gly Ala Ala Pro Ile Ile Ala Gly Val Ala Lys Gln Leu Gly
 210 215 220
 Ile Leu Thr Val Gly Ile Val Thr Thr Pro Phe Ala Phe Glu Gly Arg
 225 230 235 240
 Arg Arg Ser Val Gln Ala His Glu Gly Ile Ala Ala Leu Lys Asn Asn
 245 250 255
 Val Asp Thr Leu Ile Thr Ile Pro Asn Asn Lys Leu Leu Thr Ala Val
 260 265 270
 Ala Gln Ser Thr Pro Val Thr Glu Ala Phe Asn Leu Ala Asp Asp Ile
 275 280 285
 Leu Arg Gln Gly Val Arg Gly Ile Ser Asp Ile Ile Thr Val Pro Gly
 290 295 300
 Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Ile Met Ala Asn Ala
 305 310 315 320
 Gly Ser Ser Leu Met Gly Ile Gly Thr Ala Thr Gly Lys Ser Lys Ala
 325 330 335
 Arg Glu Ala Ala Leu Ser Ala Ile Gln Ser Pro Leu Leu Asp Val Gly
 340 345 350
 Ile Glu Arg Ala Thr Gly Ile Val Trp Asn Ile Thr Gly Gly Ser Asp

355 360 365
 Met Thr Leu Phe Glu Val Asn Ala Ala Ala Glu Val Ile Tyr Asp Leu
 370 375 380
 Val Asp Pro Asn Ala Asn Leu Ile Phe Gly Ala Val Val Asp Glu Ala
 385 390 395 400
 Leu His Asp Gln Ile Ser Ile Thr Leu Ile Ala Thr Gly Phe Ser Ser
 405 410 415
 Gln Asp Asp Pro Asp Ala Arg Ser Met Gln Tyr Ala Ser Arg Val Leu
 420 425 430
 Glu Gly Gln Ala Gly Arg Ser Ser Met Ala Ser Ser Arg Gly Gly Asn
 435 440 445
 Ser Ser Thr Ile Asn Ile Pro Asn Phe Leu Arg Lys Arg Gly Gln Arg
 450 455 460

<210> 23
 <211> 398
 <212> PRT
 <213> Guillardia theta

<400> 23
 Met Tyr Phe Ile Gln Asn Ile Lys Cys Tyr Gln Phe Asp Lys Lys Asn
 1 5 10 15
 Ile Phe Lys Thr Ile Asn Lys Phe Arg Cys Arg Ser Gln Ser Leu Ile
 20 25 30
 Lys Ser Asn Ile Ser Glu Asp Ser Phe Phe Asn Gln Glu Ile Ser Ser
 35 40 45
 Ser Pro Cys Val Ile Lys Val Ile Gly Val Gly Gly Gly Gly Asn
 50 55 60
 Ala Val Asn Arg Met Val Gly Gly Val Glu Gly Val Glu Phe Trp Ser
 65 70 75 80
 Ile Asn Thr Asp Ala Gln Ala Leu Ser Arg Ser Leu Ala Pro Asn Thr
 85 90 95
 Cys Asn Ile Gly Ala Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn
 100 105 110
 Pro Glu Ile Gly Arg Lys Ala Ala Glu Glu Ser Arg Asp Leu Ile Ala
 115 120 125
 Glu Ala Val Ser Ala Gly Asp Leu Val Phe Val Thr Ala Gly Met Gly
 130 135 140
 Gly Gly Thr Gly Ser Gly Ala Ala Pro Ile Val Ala Glu Val Ala Lys
 145 150 155 160
 Glu Met Gly Cys Leu Thr Val Gly Val Val Thr Lys Pro Phe Ala Phe
 165 170 175
 Glu Gly Lys Arg Arg Met Gln Gln Ala Asn Asp Ala Ile Leu Asn Leu
 180 185 190
 Arg Asn Lys Val Asp Thr Leu Ile Val Val Ser Asn Asp Lys Leu Leu
 195 200 205
 Gln Ile Val Pro Asp Asn Thr Pro Leu Gln Asp Ala Phe Ser Val Ala
 210 215 220
 Asp Asp Ile Leu Arg Gln Gly Val Val Gly Ile Ser Glu Ile Ile Val
 225 230 235 240
 Arg Pro Gly Leu Ile Asn Val Asp Phe Ala Asp Val Arg Ser Val Met
 245 250 255
 Ala Asp Ala Gly Ser Ala Leu Met Gly Ile Gly Thr Gly Ser Gly Lys
 260 265 270
 Thr Arg Ala Gln Asp Ala Ala Val Ala Ala Ile Ser Ser Pro Leu Leu
 275 280 285

Asp Phe Pro Ile Glu Lys Ala Arg Gly Ile Val Phe Asn Ile Thr Gly
 290 295 300
 Gly Gln Asp Met Thr Leu His Glu Ile Asn Ser Ala Ala Glu Val Ile
 305 310 315 320
 Tyr Glu Ala Val Asp Ser Asn Ala Asn Ile Ile Phe Gly Ala Leu Val
 325 330 335
 Asp Asp Asn Met Glu Asn Glu Ile Ser Ile Thr Val Val Ala Thr Gly
 340 345 350
 Phe Thr Gln Pro Asn Asp Ser Lys Phe Phe Ser Thr Lys Ser Ala Val
 355 360 365
 Asp Phe Ser Lys Ile Tyr Asp Asn Lys Lys Thr Lys Ser Thr Tyr Lys
 370 375 380
 Glu Ser Arg Ala Glu Phe Ser Asp Leu Trp Lys Lys Phe Tyr
 385 390 395

<210> 24
 <211> 368
 <212> PRT
 <213> Mallomonas splendens

<400> 24
 Gly Val Glu Leu Trp Val Val Asn Thr Asp Ala Gln Ala Leu Ser Arg
 1 5 10 15
 Ser Ser Ala Lys Arg Arg Leu Asn Ile Gly Lys Val Leu Ser Arg Gly
 20 25 30
 Leu Gly Ala Gly Gly Asn Pro Ala Ile Gly Ala Lys Ala Ala Glu Glu
 35 40 45
 Ser Arg Glu Glu Ile Met Ala Val Val Lys Asn Ala Asp Leu Val Phe
 50 55 60
 Val Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val
 65 70 75 80
 Val Ala Glu Cys Ala Lys Glu Ala Gly Ala Leu Thr Val Gly Val Val
 85 90 95
 Thr Lys Pro Phe Gly Phe Glu Gly Arg Lys Arg Met Gln Gln Ala Arg
 100 105 110
 Asn Ala Ile Leu Glu Met Lys Asp Lys Val Asp Thr Leu Ile Val Val
 115 120 125
 Ser Asn Asp Lys Leu Leu Lys Ile Val Pro Asp Asn Thr Pro Leu Thr
 130 135 140
 Glu Ala Phe Leu Val Ala Asp Asp Ile Leu Arg Gln Gly Val Val Gly
 145 150 155 160
 Ile Thr Glu Ile Ile Val Lys Pro Gly Leu Val Asn Val Asp Phe Ala
 165 170 175
 Asp Val Arg Thr Ile Met Gly Asn Ala Gly Thr Ala Leu Met Gly Ile
 180 185 190
 Gly His Gly Lys Gly Lys Asn Arg Ala Lys Asp Ala Ala Leu Ser Ala
 195 200 205
 Ile Ser Ser Pro Leu Leu Asp Phe Pro Ile Thr Arg Ala Lys Gly Ile
 210 215 220
 Val Phe Asn Ile Val Gly Gly Ser Asp Met Ser Leu Gln Glu Ile Asn
 225 230 235 240
 Ala Ala Ala Glu Val Ile Tyr Glu Asn Val Asp Gln Asp Ala Asn Ile
 245 250 255
 Ile Phe Gly Ala Met Val Asp Asp Lys Met Thr Ser Gly Glu Val Ser
 260 265 270
 Ile Thr Val Leu Ala Thr Gly Phe Ser Thr Asp Tyr Phe Ser Asn Asp

275		280		285
Gly Ser Gly Leu Glu Asn Leu Pro Pro Asn Arg Leu Ser Pro Pro Lys				
290		295		300
Thr Val Gly Ser Ala Lys Ser Tyr Ser Glu Tyr Glu Pro Pro Ser Thr				
305		310		315
Pro Lys Ala Glu Glu Arg Asp Ser Glu Tyr Leu Ser Ala Asp Asp Leu				
		325		330
Thr Asp Glu Ser Lys Glu Arg Asp Gln Asp Gly Lys Lys Asp Glu Glu				
		340		345
Lys Pro Lys Gly Gly Gly Phe Arg Gly Phe Ile Lys Arg Leu Phe Ser				
355		360		365

<210> 25
 <211> 428
 <212> PRT
 <213> Anabaena PCC7120

<400> 25

Met Thr Leu Asp Asn Asn Gln Glu Leu Thr Tyr Arg Asn Ser Gln Ser				
1	5	10	15	
Leu Gly Gln Pro Gly Phe Ser Leu Ala Val Asn Ser Ser Asn Pro Phe				
	20	25	30	
Asn His Ser Gly Leu Asn Phe Gly Gln Asn Asn Asp Ser Lys Lys Ile				
	35	40	45	
Ser Val Glu Asn Asn Arg Ile Gly Glu Ile Val Pro Gly Arg Val Ala				
	50	55	60	
Asn Ile Lys Val Ile Gly Val Gly Gly Gly Gly Asn Ala Val Asn				
65	70	75	80	
Arg Met Ile Glu Ser Asp Val Ser Gly Val Glu Phe Trp Ser Ile Asn				
	85	90	95	
Thr Asp Ala Gln Ala Leu Thr Leu Ala Gly Ala Pro Ser Arg Leu Gln				
	100	105	110	
Ile Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly Asn Pro Ala				
	115	120	125	
Ile Gly Gln Lys Ala Ala Glu Glu Ser Arg Asp Glu Ile Ala Thr Ala				
	130	135	140	
Leu Glu Gly Ala Asp Leu Val Phe Ile Thr Ala Gly Met Gly Gly Gly				
145	150	155	160	
Thr Gly Thr Gly Ala Ala Pro Ile Val Ala Glu Val Ala Lys Glu Met				
	165	170	175	
Gly Ala Leu Thr Val Gly Val Val Thr Arg Pro Phe Val Phe Glu Gly				
	180	185	190	
Arg Arg Arg Thr Ser Gln Ala Glu Gln Gly Ile Glu Gly Leu Lys Ser				
	195	200	205	
Arg Val Asp Thr Leu Ile Ile Ile Pro Asn Asn Lys Leu Leu Glu Val				
	210	215	220	
Ile Pro Glu Gln Thr Pro Val Gln Glu Ala Phe Arg Tyr Ala Asp Asp				
225	230	235	240	
Val Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro				
	245	250	255	
Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Val Met Ala Asp				
	260	265	270	
Ala Gly Ser Ala Leu Met Gly Ile Gly Val Ser Ser Gly Lys Ser Arg				
	275	280	285	
Ala Arg Glu Ala Ala Ile Ala Ala Ile Ser Ser Pro Leu Leu Glu Cys				
290	295	300		

Ser Ile Glu Gly Ala Arg Gly Val Val Phe Asn Ile Thr Gly Gly Ser
 305 310 315 320
 Asp Leu Thr Leu His Glu Val Asn Ala Ala Ala Glu Thr Ile Tyr Glu
 325 330 335
 Val Val Asp Pro Asn Ala Asn Ile Ile Phe Gly Ala Val Ile Asp Asp
 340 345 350
 Arg Leu Gln Gly Glu Val Arg Ile Thr Val Ile Ala Thr Gly Phe Thr
 355 360 365
 Gly Glu Ile Gln Ala Ala Pro Gln Gln Asn Ala Ala Asn Ala Arg Val
 370 375 380
 Val Ser Ala Pro Pro Lys Arg Thr Pro Thr Gln Thr Pro Leu Thr Asn
 385 390 395 400
 Ser Pro Ala Pro Thr Pro Glu Pro Lys Glu Lys Ser Gly Leu Asp Ile
 405 410 415
 Pro Asp Phe Leu Gln Arg Arg Arg Pro Pro Lys Asn
 420 425

<210> 26
 <211> 430
 <212> PRT
 <213> Synechocystis PCC6803

<400> 26
 Met Thr Leu Asn Asn Asp Leu Pro Leu Asn Asn Ile Gly Phe Thr Gly
 1 5 10 15
 Ser Gly Leu Asn Asp Gly Thr Glu Gly Leu Asp Asp Leu Phe Ser Ser
 20 25 30
 Ser Ile Val Asp Asn Glu Pro Leu Glu Ala Leu Val Glu Thr Pro Thr
 35 40 45
 Phe Ala Ser Pro Ser Pro Asn Leu Lys Arg Asp Gln Ile Val Pro Ser
 50 55 60
 Asn Ile Ala Lys Ile Lys Val Ile Gly Val Gly Gly Gly Gly Cys Asn
 65 70 75 80
 Ala Val Asn Arg Met Ile Ala Ser Gly Val Thr Gly Ile Asp Phe Trp
 85 90 95
 Ala Ile Asn Thr Asp Ser Gln Ala Leu Thr Asn Thr Asn Ala Pro Asp
 100 105 110
 Cys Ile Gln Ile Gly Gln Lys Leu Thr Arg Gly Leu Gly Ala Gly Gly
 115 120 125
 Asn Pro Ala Ile Gly Gln Lys Ala Ala Glu Glu Ser Arg Asp Glu Ile
 130 135 140
 Ala Arg Ser Leu Glu Gly Thr Asp Leu Val Phe Ile Thr Ala Gly Met
 145 150 155 160
 Gly Gly Gly Thr Gly Thr Gly Ala Ala Pro Ile Val Ala Glu Val Ala
 165 170 175
 Lys Glu Met Gly Cys Leu Thr Val Gly Ile Val Thr Arg Pro Phe Thr
 180 185 190
 Phe Glu Gly Arg Arg Arg Ala Lys Gln Ala Glu Glu Gly Ile Asn Ala
 195 200 205
 Leu Gln Ser Arg Val Asp Thr Leu Ile Val Ile Pro Asn Asn Gln Leu
 210 215 220
 Leu Ser Val Ile Pro Ala Glu Thr Pro Leu Gln Glu Ala Phe Arg Val
 225 230 235 240
 Ala Asp Asp Ile Leu Arg Gln Gly Val Gln Gly Ile Ser Asp Ile Ile
 245 250 255
 Ile Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Arg Ala Val

260	265	270
Met Ala Asp Ala Gly Ser Ala Leu	Met Gly Ile Gly Val Gly Ser Gly	
275	280	285
Lys Ser Arg Ala Lys Glu Ala Ala Thr Ala Ala Ile Ser Ser Pro Leu		
290	295	300
Leu Glu Ser Ser Ile Gln Gly Ala Lys Gly Val Val Phe Asn Val Thr		
305	310	315
Gly Gly Thr Asp Leu Thr Leu His Glu Val Asn Val Ala Ala Glu Ile		
325	330	335
Ile Tyr Glu Val Val Asp Ala Asp Ala Asn Ile Ile Phe Gly Ala Val		
340	345	350
Ile Asp Asp Arg Leu Gln Gly Glu Met Arg Ile Thr Val Ile Ala Thr		
355	360	365
Gly Phe Asn Gly Glu Lys Glu Lys Pro Gln Ala Lys Thr Ser Ser Lys		
370	375	380
Pro Val Leu Ser Gly Pro Pro Ala Gly Val Glu Thr Val Pro Ser Thr		
385	390	395
Thr Thr Pro Glu Asp Pro Leu Gly Glu Ile Pro Met Ala Pro Glu Leu		
405	410	415
Asp Ile Pro Asp Phe Leu Gln Lys Arg Arg Phe Pro Arg Arg		
420	425	430

<210> 27

<211> 433

<212> PRT

<213> Arabidopsis thaliana

<400> 27

Met Ala Ile Ile Pro Leu Ala Gln Leu Asn Glu Leu Thr Ile Ser Ser	
1	5
Ser Ser Ser Ser Phe Leu Thr Lys Ser Ile Ser Ser His Ser Leu His	
20	25
Ser Ser Cys Ile Cys Ala Ser Ser Arg Ile Ser Gln Phe Arg Gly Gly	
35	40
Phe Ser Lys Arg Arg Ser Asp Ser Thr Arg Ser Lys Ser Met Arg Leu	
50	55
Arg Cys Ser Phe Ser Pro Met Glu Ser Ala Arg Ile Lys Val Ile Gly	
65	70
Val Gly Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Ser Ser Gly	
85	90
Leu Gln Ser Val Asp Phe Tyr Ala Ile Asn Thr Asp Ser Gln Ala Leu	
100	105
Leu Gln Phe Ser Ala Glu Asn Pro Leu Gln Ile Gly Glu Leu Leu Thr	
115	120
Arg Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala	
130	135
Glu Glu Ser Lys Asp Ala Ile Ala Asn Ala Leu Lys Gly Ser Asp Leu	
145	150
Val Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala	
165	170
Pro Val Val Ala Gln Ile Ser Lys Asp Ala Gly Tyr Leu Thr Val Gly	
180	185
Val Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln	
195	200
Ala Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile	
210	215
	220

Val Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro
 225 230 235 240
 Leu Gln Asp Ala Phe Leu Leu Ala Asp Asp Val Leu Arg Gln Gly Val
 245 250 255
 Gln Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp
 260 265 270
 Phe Ala Asp Val Lys Ala Val Met Lys Asp Ser Gly Thr Ala Met Leu
 275 280 285
 Gly Val Gly Val Ser Ser Ser Lys Asn Arg Ala Glu Glu Ala Ala Glu
 290 295 300
 Gln Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr
 305 310 315 320
 Gly Val Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu
 325 330 335
 Val Asn Arg Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala
 340 345 350
 Asn Ile Ile Phe Gly Ala Val Val Asp Asp Arg Tyr Thr Gly Glu Ile
 355 360 365
 His Val Thr Ile Ile Ala Thr Gly Phe Ser Gln Ser Phe Gln Lys Thr
 370 375 380
 Leu Leu Thr Asp Pro Arg Ala Ala Lys Leu Leu Asp Lys Met Gly Ser
 385 390 395 400
 Ser Gly Gln Gln Glu Asn Lys Gly Met Ser Leu Pro His Gln Lys Gln
 405 410 415
 Ser Pro Ser Thr Ile Ser Thr Lys Ser Ser Ser Pro Arg Arg Leu Phe
 420 425 430
 Phe

<210> 28
 <211> 423
 <212> PRT
 <213> Pisum sativum

<400> 28
 Met Ala Thr Leu Leu Pro Ser Thr Ile Ser Asn Pro Asn Lys Leu Thr
 1 5 10 15
 Ser Tyr Ser Ser Leu Phe His Asn Ala Ser Leu Ser Thr Ser Pro Ser
 20 25 30
 Ser Leu Thr Thr Thr Ser Val Ser Ile Tyr Pro Lys Thr Gln Arg Phe
 35 40 45
 Gly Arg Arg Phe Gly Ser Val Arg Cys Ser Leu Ala Tyr Val Asp Asn
 50 55 60
 Ala Lys Ile Lys Val Val Gly Ile Gly Gly Gly Asn Asn Ala Val
 65 70 75 80
 Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Ile
 85 90 95
 Asn Thr Asp Ala Gln Ala Leu Leu His Ser Ala Ala Glu Asn Pro Ile
 100 105 110
 Lys Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly Gly Asn Pro
 115 120 125
 Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu Ala Ile Ala Asn
 130 135 140
 Ala Leu Lys Gly Ser Asp Leu Val Phe Ile Thr Ala Gly Met Gly Gly
 145 150 155 160
 Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile Ser Lys Glu

				165						170					175				
Ala	Gly	Tyr	Leu	Thr	Val	Gly	Val	Val	Thr	Tyr	Pro	Phe	Ser	Phe	Glu				
			180					185					190						
Gly	Arg	Lys	Arg	Ser	Leu	Gln	Ala	Leu	Glu	Ala	Ile	Glu	Lys	Leu	Gln				
		195					200					205							
Lys	Asn	Val	Asp	Thr	Leu	Ile	Val	Ile	Pro	Asn	Asp	Arg	Leu	Leu	Asp				
	210					215					220								
Ile	Ala	Asp	Glu	Gln	Met	Pro	Leu	Gln	Asp	Ala	Phe	Arg	Leu	Ala	Asp				
225				230					235						240				
Asp	Val	Leu	Arg	Gln	Gly	Val	Gln	Gly	Ile	Ser	Asp	Ile	Ile	Thr	Ile				
			245						250					255					
Pro	Gly	Leu	Val	Asn	Val	Asp	Phe	Ala	Asp	Val	Lys	Ala	Val	Met	Lys				
		260						265					270						
Asp	Ser	Gly	Thr	Ala	Met	Leu	Gly	Val	Gly	Val	Ser	Ser	Gly	Lys	Asn				
	275					280						285							
Arg	Ala	Glu	Glu	Ala	Ala	Glu	Gln	Ala	Thr	Leu	Ala	Pro	Leu	Ile	Gly				
	290					295					300								
Ser	Ser	Ile	Gln	Ser	Ala	Thr	Gly	Val	Val	Tyr	Asn	Ile	Thr	Gly	Gly				
305					310					315					320				
Lys	Asp	Ile	Thr	Leu	Gln	Glu	Val	Asn	Arg	Val	Ser	Gln	Val	Val	Thr				
			325						330					335					
Ser	Leu	Ala	Asp	Pro	Ser	Ala	Asn	Ile	Ile	Phe	Gly	Ala	Val	Val	Asp				
		340					345						350						
Asp	Arg	Tyr	Thr	Gly	Glu	Ile	His	Val	Thr	Ile	Ile	Ala	Thr	Gly	Phe				
	355						360					365							
Ser	Gln	Ser	Phe	Gln	Lys	Lys	Leu	Leu	Thr	Asp	Pro	Arg	Ala	Ala	Lys				
	370					375					380								
Leu	Leu	Asp	Lys	Val	Ala	Glu	Gly	Lys	Glu	Ser	Lys	Thr	Val	Pro	Pro				
385				390						395					400				
Pro	Leu	Lys	Ser	Ser	Asn	Phe	Ser	Ser	Lys	Val	Glu	Ser	Arg	Pro	Pro				
			405						410					415					
Pro	Pro	Arg	Lys	Leu	Phe	Phe													
			420																

<210> 29

<211> 413

<212> PRT

<213> Nicotiana tabacum

<400> 29

Met	Ala	Thr	Ile	Ser	Asn	Pro	Ala	Glu	Ile	Ala	Ala	Ser	Ser	Pro	Ser				
1				5					10					15					
Phe	Ala	Phe	Tyr	His	Ser	Ser	Phe	Ile	Pro	Lys	Gln	Cys	Cys	Phe	Thr				
		20						25					30						
Lys	Ala	Arg	Arg	Lys	Ser	Leu	Cys	Lys	Pro	Gln	Arg	Phe	Ser	Ile	Ser				
		35				40						45							
Ser	Ser	Phe	Thr	Pro	Phe	Asp	Ser	Ala	Lys	Ile	Lys	Val	Ile	Gly	Val				
	50					55					60								
Gly	Gly	Gly	Gly	Asn	Asn	Ala	Val	Asn	Arg	Met	Ile	Gly	Ser	Gly	Leu				
65				70					75					80					
Gln	Gly	Val	Asp	Phe	Tyr	Ala	Ile	Asn	Thr	Asp	Ala	Gln	Ala	Leu	Leu				
			85					90						95					
Gln	Ser	Ala	Ala	Glu	Asn	Pro	Leu	Gln	Ile	Gly	Glu	Leu	Leu	Thr	Arg				
		100						105						110					
Gly	Leu	Gly	Thr	Gly	Gly	Asn	Pro	Leu	Leu	Gly	Glu	Gln	Ala	Ala	Glu				
		115					120						125						

Glu Ser Lys Glu Ala Ile Ala Asn Ser Leu Lys Gly Ser Asp Met Val
 130 135 140
 Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro
 145 150 155 160
 Val Val Ala Gln Ile Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val
 165 170 175
 Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Val Gln Ala
 180 185 190
 Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val
 195 200 205
 Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu
 210 215 220
 Gln Asp Ala Phe Leu Leu Ala Asp Asp Val Leu Arg Gln Gly Val Gln
 225 230 235 240
 Gly Ile Ser Asp Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe
 245 250 255
 Ala Asp Val Lys Ala Val Met Lys Asp Ser Gly Thr Ala Met Leu Gly
 260 265 270
 Val Gly Val Ser Ser Ser Lys Asn Arg Ala Glu Glu Ala Ala Glu Gln
 275 280 285
 Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr Gly
 290 295 300
 Val Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val
 305 310 315 320
 Asn Arg Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn
 325 330 335
 Ile Ile Phe Gly Ala Val Val Asp Glu Arg Tyr Asn Gly Glu Ile His
 340 345 350
 Val Thr Ile Ile Ala Thr Gly Phe Thr Gln Ser Phe Gln Lys Thr Leu
 355 360 365
 Leu Ser Asp Pro Arg Gly Ala Lys Leu Ala Asp Lys Gly Pro Val Ile
 370 375 380
 Gln Glu Ser Met Ala Ser Pro Val Thr Leu Arg Ser Ser Thr Ser Pro
 385 390 395 400
 Ser Thr Thr Ser Arg Thr Pro Thr Arg Arg Leu Phe Phe
 405 410

<210> 30

<211> 419

<212> PRT

<213> Nicotiana tabacum

<400> 30

Met Ala Thr Met Leu Gly Leu Ser Asn Pro Ala Glu Ile Ala Ala Ser
 1 5 10 15
 Ser Pro Ser Ser Thr Ser Phe Ala Phe Tyr His Ser Ser Phe Ile Pro
 20 25 30
 Lys Gln Cys Cys Phe Thr Lys Ala Arg Arg Lys Ser Leu Cys Lys Pro
 35 40 45
 Gln Arg Phe Ser Ile Ser Ser Ser Phe Thr Pro Phe Asp Ser Ala Lys
 50 55 60
 Ile Lys Val Ile Gly Val Gly Gly Gly Gly Asn Asn Ala Val Asn Arg
 65 70 75 80
 Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe Tyr Ala Ile Asn Thr
 85 90 95
 Asp Ala Gln Ala Leu Leu Gln Ser Ala Ala Glu Asn Pro Leu Gln Ile

100					105					110						
Gly	Glu	Leu	Leu	Thr	Arg	Gly	Leu	Gly	Thr	Gly	Gly	Asn	Pro	Leu	Leu	
115					120					125						
Gly	Glu	Gln	Ala	Ala	Glu	Glu	Ser	Lys	Glu	Ala	Ile	Ala	Asn	Ser	Leu	
130					135					140						
Lys	Gly	Ser	Asp	Met	Val	Phe	Ile	Thr	Ala	Gly	Met	Gly	Gly	Gly	Thr	
145					150					155					160	
Gly	Ser	Gly	Ala	Ala	Pro	Val	Val	Ala	Gln	Ile	Ala	Lys	Glu	Ala	Gly	
165					170					175						
Tyr	Leu	Thr	Val	Gly	Val	Val	Thr	Tyr	Pro	Phe	Ser	Phe	Glu	Gly	Arg	
180					185					190						
Lys	Arg	Ser	Val	Gln	Ala	Leu	Glu	Ala	Ile	Glu	Lys	Leu	Gln	Lys	Asn	
195					200					205						
Val	Asp	Thr	Leu	Ile	Val	Ile	Pro	Asn	Asp	Arg	Leu	Leu	Asp	Ile	Ala	
210					215					220						
Asp	Glu	Gln	Thr	Pro	Leu	Gln	Asp	Ala	Phe	Leu	Ala	Asp	Asp	Val		
225					230					235					240	
Leu	Arg	Gln	Gly	Val	Gln	Gly	Ile	Ser	Asp	Ile	Ile	Thr	Ile	Pro	Gly	
245					250					255						
Leu	Val	Asn	Val	Asp	Phe	Ala	Asp	Val	Lys	Ala	Val	Met	Lys	Asp	Ser	
260					265					270						
Gly	Thr	Ala	Met	Leu	Gly	Val	Gly	Val	Ser	Ser	Ser	Lys	Asn	Arg	Ala	
275					280					285						
Glu	Glu	Ala	Ala	Glu	Gln	Ala	Thr	Leu	Ala	Pro	Leu	Ile	Gly	Ser	Ser	
290					295					300						
Ile	Gln	Ser	Ala	Thr	Gly	Val	Val	Tyr	Asn	Ile	Thr	Gly	Gly	Lys	Asp	
305					310					315					320	
Ile	Thr	Leu	Gln	Glu	Val	Asn	Arg	Val	Ser	Gln	Val	Val	Thr	Ser	Leu	
325					330					335						
Ala	Asp	Pro	Ser	Ala	Asn	Ile	Ile	Phe	Gly	Ala	Val	Val	Asp	Glu	Arg	
340					345					350						
Tyr	Asn	Gly	Glu	Ile	His	Val	Thr	Ile	Ile	Ala	Thr	Gly	Phe	Thr	Gln	
355					360					365						
Ser	Phe	Gln	Lys	Thr	Leu	Leu	Ser	Asp	Pro	Arg	Gly	Ala	Lys	Leu	Ala	
370					375					380						
Asp	Lys	Gly	Pro	Val	Ile	Gln	Glu	Ser	Met	Ala	Ser	Pro	Val	Thr	Leu	
385					390					395					400	
Arg	Ser	Ser	Thr	Ser	Pro	Ser	Thr	Thr	Ser	Arg	Thr	Pro	Thr	Arg	Arg	
405					410					415						
Leu Phe Phe																

<210> 31

<211> 408

<212> PRT

<213> Nicotiana tabacum

<400> 31

Gly	Leu	Ser	Ser	Asn	Thr	Gly	Ile	Asp	Ile	Leu	Ser	Ser	Ser	Ser	Asn
1				5					10					15	
Ser	Leu	Ser	Phe	Tyr	His	Ser	Thr	Arg	Phe	Thr	Gln	Cys	Phe	Ser	Pro
20					25					30					
Lys	Ser	Leu	Cys	Lys	Arg	Gln	Arg	Arg	Arg	Phe	Ser	Ile	Cys	Ser	Ser
35					40					45					
Leu	Ser	Ser	Ala	Lys	Ile	Lys	Val	Val	Gly	Val	Gly	Gly	Gly	Gly	Asn
50					55					60					

Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu Gln Gly Val Asp Phe
 65 70 75 80
 Tyr Ala Val Asn Thr Asp Ala Gln Ala Leu Leu Gln Ser Thr Val Glu
 85 90 95
 Asn Pro Ile Gln Ile Gly Glu Leu Leu Thr Arg Gly Leu Gly Thr Gly
 100 105 110
 Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu Glu Ser Lys Glu His
 115 120 125
 Ile Ala Asn Ala Leu Lys Gly Ser Asp Met Val Phe Ile Thr Ala Gly
 130 135 140
 Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro Val Val Ala Gln Ile
 145 150 155 160
 Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val Val Thr Tyr Pro Phe
 165 170 175
 Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln Ala Leu Glu Ala Ile Glu
 180 185 190
 Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val Ile Pro Asn Asp Arg
 195 200 205
 Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu Gln Asn Ala Phe Leu
 210 215 220
 Leu Ala Asp Asp Val Leu Cys Gln Gly Val Gln Gly Ile Ser Asp Ile
 225 230 235 240
 Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe Ala Asp Val Lys Ala
 245 250 255
 Ile Met Lys Asp Ser Gly Thr Ala Met Leu Gly Val Gly Val Ser Ser
 260 265 270
 Ser Arg Asn Arg Ala Glu Glu Ala Ala Glu Gln Ala Thr Leu Ala Pro
 275 280 285
 Leu Ile Gly Leu Ser Ile Gln Ser Ala Thr Gly Val Val Tyr Asn Ile
 290 295 300
 Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val Asn Lys Val Ser Gln
 305 310 315 320
 Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn Ile Ile Phe Gly Ala
 325 330 335
 Val Val Asp Glu Arg Tyr Asn Gly Glu Ile Gln Val Thr Leu Ile Ala
 340 345 350
 Thr Gly Phe Ala Gln Ser Phe Gln Asn Ser Leu Leu Thr Asp Pro Arg
 355 360 365
 Gly Ala Lys Leu Val Asp Lys Ser Lys Gly Thr Thr Glu Arg Thr Val
 370 375 380
 Ser Pro Asp Thr Leu Arg Ser Ser Glu Ser Pro Ser Thr Lys Pro Arg
 385 390 395 400
 Pro Ala Ala Arg Arg Leu Phe Phe
 405

<210> 32
 <211> 413
 <212> PRT
 <213> Nicotiana tabacum

<400> 32
 Met Ala Thr Met Leu Gly Leu Ser Ser Asn Thr Gly Ile Asp Ile Leu
 1 5 10 15
 Ser Ser Ser Ser Asn Ser Leu Ser Phe Tyr His Ser Thr Arg Phe Thr
 20 25 30
 Gln Cys Phe Ser Pro Lys Ser Leu Cys Lys Arg Gln Arg Arg Arg Phe

35	40	45
Ser Ile Cys Ser Ser Leu Ser Ser Ala Lys Ile Lys Val Val Gly Val		
50	55	60
Gly Gly Gly Gly Asn Asn Ala Val Asn Arg Met Ile Gly Ser Gly Leu		
65	70	75
Gln Gly Val Asp Phe Tyr Ala Val Asn Thr Asp Ala Gln Ala Leu Leu		
85	90	95
Gln Ser Thr Val Glu Asn Pro Ile Gln Ile Gly Glu Leu Leu Thr Arg		
100	105	110
Gly Leu Gly Thr Gly Gly Asn Pro Leu Leu Gly Glu Gln Ala Ala Glu		
115	120	125
Glu Ser Lys Glu His Ile Ala Asn Ala Leu Lys Gly Ser Asp Met Val		
130	135	140
Phe Ile Thr Ala Gly Met Gly Gly Gly Thr Gly Ser Gly Ala Ala Pro		
145	150	155
Val Val Ala Gln Ile Ala Lys Glu Ala Gly Tyr Leu Thr Val Gly Val		
165	170	175
Val Thr Tyr Pro Phe Ser Phe Glu Gly Arg Lys Arg Ser Leu Gln Ala		
180	185	190
Leu Glu Ala Ile Glu Lys Leu Gln Lys Asn Val Asp Thr Leu Ile Val		
195	200	205
Ile Pro Asn Asp Arg Leu Leu Asp Ile Ala Asp Glu Gln Thr Pro Leu		
210	215	220
Gln Asn Ala Phe Leu Leu Ala Asp Asp Val Leu Cys Gln Gly Val Gln		
225	230	235
Gly Ile Ser Asp Ile Ile Thr Ile Pro Gly Leu Val Asn Val Asp Phe		
245	250	255
Ala Asp Val Lys Ala Ile Met Lys Asp Ser Gly Thr Ala Met Leu Gly		
260	265	270
Val Gly Val Ser Ser Ser Arg Asn Arg Ala Glu Glu Ala Ala Glu Gln		
275	280	285
Ala Thr Leu Ala Pro Leu Ile Gly Ser Ser Ile Gln Ser Ala Thr Gly		
290	295	300
Asp Val Tyr Asn Ile Thr Gly Gly Lys Asp Ile Thr Leu Gln Glu Val		
305	310	315
Asn Lys Val Ser Gln Val Val Thr Ser Leu Ala Asp Pro Ser Ala Asn		
325	330	335
Ile Ile Phe Gly Ala Val Val Asp Glu Arg Tyr Asn Gly Glu Ile Gln		
340	345	350
Val Thr Leu Ile Ala Thr Gly Phe Ala Gln Ser Phe Gln Asn Ser Leu		
355	360	365
Leu Thr Asp Pro Arg Gly Ala Lys Leu Val Asp Lys Ser Lys Gly Thr		
370	375	380
Thr Glu Arg Thr Val Ser Pro Asp Thr Leu Arg Ser Ser Glu Ser Pro		
385	390	395
Ser Thr Lys Pro Arg Pro Ala Thr Arg Arg Leu Phe Phe		400
405	410	